

REMARKS

Status of the Claims

Claims 1-21 are pending in the application. Claims 1-21 were provisionally rejected on the ground of obviousness-type double patenting over claims 1-24 of copending application no. 10/570,099 (“the ‘099 application”). Claims 1-21 were also provisionally rejected over the ‘099 application under 35 U.S.C. § 103(a). In addition, claims 1-21 were rejected under 35 U.S.C. § 103(a) over U.S. patent no. 4,482,741 to Kurek in view of U.S. patent no. 6,476,269 to Nakamura.

Provisional Double Patenting Rejection

Claims 1-21 were provisionally rejected on the ground of obviousness-type double patenting over claims 1-24 of the ‘099 application. Applicant proposes to overcome this rejection by filing a terminal disclaimer upon the indication of otherwise allowable subject matter.

Provisional Rejection Under 35 U.S.C. § 103(a)

Claims 1-21 were provisionally rejected under 35 U.S.C. § 103(a) over claims 1-24 of the ‘099 application. Applicants respond to this rejection by stating that the present application and the ‘099 application were assigned to the same entity at the time the invention was made. Accordingly, Applicants submit that the ‘099 application is disqualified as prior art under 35 U.S.C. § 103(c) in a rejection under 35 U.S.C. § 103(a) (*see* MPEP § 706.02(l)(1) and (l)(2)).

Rejection Under 35 U.S.C. § 103(a)

Claims 1-21 were rejected under 35 U.S.C. § 103(a) over Kurek in view of Nakamura. According to the Examiner, “Kurek teaches a process where xylenediamines may be prepared continuously by reducing phthalonitrile with hydrogen in the presence of a heterogeneous catalyst . . .” (Office Action, page 5). The Examiner goes on to state that “Nakamura et al

teaches a method for producing xylenediamine continuously by hydrogenating phthalonitrile synthesized by ammoxidation of xylene, wherein phthalonitrile is trapped in an organic solvent at a temperature of 300-500°C . . .” (*Id.*) The Examiner acknowledges that a “difference between the prior art and the claims is that there is no phthalonitrile melt used in the process specific process conditions are not taught or are different from those claimed. Also, the specific type of reactor is not taught.” (*Id.*) Nonetheless, the Examiner takes the position that “[a]lthough no specific concentrations, etc. are recited, merely modifying the process conditions such as temperature and concentration is not a patentable modification . . .” (*Id.*) “Also, since the phthalonitrile is being introduced in a heated state, it is obvious for one of ordinary skill in the art to recognize the heated phthalonitrile as being at least slightly melted in order to carry out the process. One of ordinary skill in the art would be motivated to rely on melting the phthalonitrile in order to get it in liquid form as it is stated that phthalonitrile is not soluble in many solvents.” (*Id.* at 6). Applicants traverse this rejection.

Applicants submit that the claimed invention is not rendered obvious by Kurek, either alone or in combination with Nakamura. In contrast to the Examiner’s assertion, a person having ordinary skill in the art would not be motivated to modify Kurek in order to obtain Applicant’s claimed invention. As recognized by the Examiner, Kurek does not describe the use of a phthalonitrile melt. To the contrary, Kurek specifically emphasizes using solubilized solid phase phthalonitrile in a temperature range of “from about 80° to about 125° C” (Kurek, col. 3, lines 38-41), which is well below phthalonitrile’s melting point of about 161° C (*see* Applicants’ specification, page 1, line 21). Nowhere does Kurek teach or suggest heating phthalonitrile to a temperature higher than this, let alone to its melting point or above.

To the contrary, a person having skill in the art reading Kurek would not be led to heat phthalonitrile to at or above its melting point at any point, because as Kurek emphasizes, operating at too high of a temperature can lead to unfavorable vaporization of solvents and ammonia (*see* Kurek, col. 1, lines 25-36; *see also* Kurek, col. 3, lines 26-28 (“ammonia must be in the liquid phase in order to operate efficiently as the protecting agent”)), especially given Kurek’s emphasis that the reaction take place at low pressure (*see, e.g.*, Kurek, col. 3, lines 62-66

(“In addition, an added benefit which results when operating the reaction at pressures less than about 1000 psig in a continuous process is found in the fact that high pressure equipment normally used in this particular reduction reaction is not required.”)).

Moreover, Kurek’s disclosed process is fundamentally different from Applicants’ for at least the reason that Kurek’s continuous process uses xylylenediamine that has been purified and separated from the rest of the reactor effluent as a recycle feedstock to the reactor (*see* Kurek, col. 4, lines 61-68). In contrast, Applicants’ claimed process uses the reactor effluent itself.

Kurek lists several advantages for using this purified xylylenediamine product as a recycle (*see, e.g.*, Kurek, col. 3, lines 48-62). Given that additional cost must be incurred in order to purify xylylenediamine (as opposed to simply using the reactor effluent itself), a person having ordinary skill in the art would have been provided with the suggestion that the advantages set forth by Kurek in using purified xylylenediamine as a recycle feed outweigh the costs incurred in purifying it in the first place. Thus, they would have been led away from Applicants’ claimed invention, which uses the reactor effluent itself.

Accordingly, in order to obtain Applicants’ claimed invention from Kurek, a person having ordinary skill in the art would be required to make at least two substantial deviations from Kurek’s disclosed process. First, they would be required to use phthalonitrile melt as opposed to solubilized solid phase phthalonitrile. Second, they would be required to use purified xylylenediamine that has been separated from the rest of the reactor effluent as a recycle feed as opposed to the reactor effluent itself. Nothing in Kurek directs a person having ordinary skill in the art to make such a series of modifications. To the contrary, Kurek teaches away from such modifications.

The examiner has not shown how these deficiencies of Kurek are remedied by the disclosure of Nakamura. As with Kurek, Nakamura also does not teach or suggest using a phthalonitrile melt but, instead, teaches using gaseous phthalonitrile. In fact, Nakamura teaches away from using a phthalonitrile melt (*see, e.g.*, Nakamura, col. 2, lines 24-27). Moreover, Nakamura contains no teaching or suggestion regarding recycling part of the reactor effluent as a

feedstock. Accordingly, for at least these reasons, the disclosure of Nakamura would neither provide a motivation nor a reasonable expectation of success for modifying Kurek in order to obtain Applicants' claimed invention. Thus, the claims cannot be found to be obvious over Kurek in view of Nakamura.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 12810-00212-US1 from which the undersigned is authorized to draw.

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Respectfully submitted,

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